

AMENDMENTS TO THE CLAIMSLISTING OF CLAIMS:

Claim 1 (Previously presented) A process for obtaining a bulk gallium-containing nitridemonocrystal from supercritical ammonia-containing solution in the presence of a mineralizer, wherein in a pressurized reaction vessel – using ammonia as solvent and Group I element azides and optionally Group II element azides as mineralizer, a supercritical ammonia-containing solution including Group I and optionally Group II element ions is first obtained to dissolve next a gallium-containing feedstock at dissolution temperature and/or dissolution pressure and then gallium-containing nitride is crystallized from the supercritical solution on the surface of at least one seed at the crystallization temperature and/or crystallization pressure, wherein the crystallization temperature and/or crystallization pressure is selected according to the temperature coefficient of solubility and pressure coefficient of solubility of the gallium-containing nitride to be crystallized.

Claim 2 (Previously presented) A process for obtaining a bulk gallium-containing nitride monocrystal from supercritical ammonia-containing solution in the presence of Group I and optionally Group II element-containing mineralizer, wherein when gallium-containing nitride has a negative temperature coefficient of solubility and a positive pressure coefficient of solubility in supercritical ammonia-containing solution, in the presence of Group I and optionally Group II element-containing mineralizer, in a pressurized reaction vessel – using Group I element azides and optionally Group II element azides as mineralizers – supercritical ammonia-containing solution including Group I and optionally Group II element ions is first obtained to dissolve next a gallium-containing feedstock at dissolution temperature and/or dissolution pressure and then gallium-containing nitride is crystallized from the supercritical solution on the surface of at least one seed by means of bringing the temperature to crystallization temperature and/or the pressure to crystallization pressure, the crystallization temperature being higher than the dissolution temperature and/or the crystallization pressure being lower than the dissolution pressure at least at the crystallization zone of the pressurized reaction vessel, where the seed is placed – so that supersaturation of the supercritical solution with respect to the seed is achieved – and then the supersaturation of the supercritical solution is maintained at the level at which spontaneous crystallization

of the nitride may be neglected, while crystallization of the gallium-containing nitride is carried out on the seed.

Claim 3 (Previously presented) Process according to claim 1, wherein the gaseous nitrogen, produced during the decomposition of the azide, is at least partially evacuated from the system before the re-crystallization step is started.

Claim 4 (Previously presented) Process according to claim 1, wherein as a gallium-containing nitride – the nitride having a general formula  $\text{Al}_x\text{Ga}_{1-x}\text{N}$ , where  $0 \leq x < 1$  is crystallized.

Claim 5 (Previously presented) Process according to claim 1, wherein the azide mineralizers are selected from the group consisting of  $\text{LiN}_3$ ,  $\text{NaN}_3$ ,  $\text{KN}_3$ ,  $\text{CsN}_3$  and mixtures thereof.

Claim 6 (Previously presented) Process according to claim 5, wherein the mineralizer used contains at least one compound selected from the group consisting of  $\text{LiN}_3$ ,  $\text{NaN}_3$ ,  $\text{KN}_3$  and  $\text{CsN}_3$ .

Claim 7 (Previously presented) Process according to the claim 6, wherein the mineralizer contains  $\text{NaN}_3$  and  $\text{KN}_3$  mixed in arbitrary molar ratio.

Claim 8 (Previously presented) Process according to the claim 6, wherein the mineralizer contains  $\text{NaN}_3$  and  $\text{LiN}_3$  mixed in arbitrary molar ratio.

Claim 9 (Previously presented) Process according to the claim 6, wherein the mineralizer contains  $\text{KN}_3$  and  $\text{LiN}_3$  mixed in arbitrary molar ratio.

Claim 10 (Previously presented) Process according to the claim 6, wherein the mineralizer contains also Group I and optionally Group II element-containing compound(s) other than azides.

Claim 11 (Previously presented) Process according to claim 1, wherein Group I element azides are introduced into the system in a molar ratio of azides to ammonia ranging from 1:200 to 1:2.

Claim 12 (Previously presented) Process according to claim 1, wherein a seed crystal with at least a crystalline layer of Group XIII element nitride, preferably gallium-containing nitride, having a dislocation density less than  $10^7 / \text{cm}^2$  is used.

Claim 13 (Previously presented) Process according to claim 1, wherein a structure having a number of surfaces spaced adequately far from each other, arranged on a primary substrate and susceptible to the lateral overgrowth of crystalline nitrides is used as a seed.

Claim 14 (Previously presented) Process according to claim 1, wherein a monocrystalline nitride layer is obtained having the same or better quality as it gets thicker.

Claim 15 (Previously presented) Process according to claim 13, wherein the seed contains the primary substrate made of a crystalline nitride of Group XIII elements.

Claim 16 (Previously presented) Process according to claim 15, wherein the seed contains the primary substrate made of gallium nitride – GaN.

Claim 17 (Previously presented) Process according to claim 15, wherein the seed contains the primary substrate made of a crystalline material such as sapphire, spinel, ZnO, SiC or Si, wherein the primary substrate made of the material reacting with a supercritical ammonia-containing solution is covered with a protective layer, preferably made of a nitride containing Group XIII elements or metallic Ag, prior to formation of a monocrystalline nitride layer.

Claim 18 (Previously presented) Process according to claim 1, wherein the bulk nitride monocrystal obtained consists essentially of gallium nitride – GaN.

Claim 19 (Previously presented) Process according to claim 1, wherein the bulk nitride monocrystal obtained contains any of the following elements: Ni, Cr, Co, Ti, Fe, Al, Ag, Mo, W, Si and Mn.

Claim 20 (Previously presented) Process according to claim 1, wherein some surfaces of the seed are covered with a mask layer prior to formation of a monocrystalline nitride layer.

Claim 21-25 (Canceled)

Claim 26 (Previously presented) The mineralizer according to the claim 25, which contains NaN<sub>3</sub> and KN<sub>3</sub> in arbitrary molar ratio of NaN<sub>3</sub> to KN<sub>3</sub>.

Claim 27 (Previously presented) The mineralizer according to the claim 25, which contains NaN<sub>3</sub> and LiN<sub>3</sub> in arbitrary molar ratio of NaN<sub>3</sub> to LiN<sub>3</sub>.

Claim 28 (Previously presented) The mineralizer according to the claim 25, which contains KN<sub>3</sub> and LiN<sub>3</sub> in arbitrary molar ratio of KN<sub>3</sub> to LiN<sub>3</sub>.

Claim 29 (Previously presented) The mineralizer according to the claim 25, which contains NaN<sub>3</sub>, KN<sub>3</sub> and LiN<sub>3</sub> in arbitrary molar ratio of NaN<sub>3</sub> to KN<sub>3</sub> and LiN<sub>3</sub>.

Claim 30 (Previously presented) The mineralizer according to the claim 25, which further contains Group I and optionally Group II element-containing compound(s) other than azides and/or Group I element, and/or Group II element.

Claim 31 (Original) A method for epitaxy comprising obtaining a bulk nitride monocrystal according to claim 21 as substrate for epitaxy and creating epitaxy.

Claim 32 (Original) The method of claim 31, wherein the bulk nitride monocrystal has at least one epitaxial layer of the same or different Group XIII element nitride, deposited by a MOCVD, HVPE or MBE method as a template for opto-electronic devices.

Claim 33 (Original) The method of claim 32, wherein the epitaxial layer is doped with one or more dopants.

Claim 34 (New) A bulk nitride monocrystal obtained by a process according to claim 1, having reduced content of impurities in form of oxygen, as compared to nitride monocrystal obtained supercritical solutions having different qualitative composition than used in claim 1.

Claims 35 (New) A mineralizer for supercritical ammono-containing solution, to obtain a bulk nitride monocrystal having reduced content of impurities, comprising at least one compound selected from the group consisting of LiN<sub>3</sub>, NaN<sub>3</sub>, KN<sub>3</sub> and CsN<sub>3</sub>.